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AN ANALYSIS OF "DROMIA DORMIA (LINNAEUS)."[1]

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Since 1837 two large Indo-Pacific Dromiids have been confused under the names *Dromia rumphii* or *D. dormia.* Their ranges are not coincident, one species stretching from the Hawaiian Islands southwestward to the Moluccas, the Red Sea and the Cape of Good Hope; the other, from northern Japan to China, Java, the Indian Ocean, Gulf of Aden and Natal. The best figure of the Hawaiian species is that by Seba, the best figure of the Japanese species is that by de Haan.

Both species are broader than long, covered with a close, short pile and with a longer pile on inner surface of chela, on margins of other legs and of carapace; there are 3 frontal teeth (between the antennae), a large conical tooth on the suborbital region (not margin), a V-shaped outer orbital fissure and a series of antero-lateral teeth, the last one of which is behind the branchial groove; in both species the chelipeds bear epipodites and the prehensile legs (fourth and fifth pereiopods) are very nearly the same length, the last pair narrower than the other.

The Hawaiian species is distinguished by great convexity of carapace, the surface rising abruptly behind the front and antero-lateral border. The pile covering the carapace is smoother and more velvety than in the Japanese form. The cardiac and inner branchial grooves are shallow, the outer half of the branchial groove rather well marked, because of a blunt ridge behind it which ends in the tooth at the lateral angle; this tooth is disguised by a brush of long hair which makes it appear more obtuse than it really is; toward the tip it curves forward. There are four other antero-lateral teeth which are conical and blunt-pointed, the first much the largest, the second considerably smaller, the third very small and close to the second and sometimes, in large specimens, on the slope of the second, the fourth tooth intermediate in size between first and second. The greatest interspace is between fourth and fifth teeth. and is partly convex in outline.

The median tooth of the front is large and though narrower than the lateral pair, is more advanced. There is a thickening, without denticle, in the upper margin of the orbit.

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The dactyls of the two walking legs (second and third pereiopods) are sensibly shorter than their propodites, subconical, very stout at base, tapering rapidly to a coarse, dark, horny nail; except on the nail the surface is concealed by the same short pile that covers most of the crab; on the distal half of the lower (concave) surface there is a row of 4 or 5 graduated spines, the longest of which is near the nail and the shortest ones are minute.

The curved dactyl of the first prehensile leg (fourth pereiopod) is opposed by a single smaller propodal spine; the dactyl of the last leg is opposed by two smaller unequal spines side by side, while a third, very small, distal spine of the propodus is situated at the other (convex) side of the dactylus.

The sternal sulci of the female are long and gradually converge until near the end when they diverge slightly, terminating just before reaching the middle of the base of the chelipeds; in the latter part of their course they are separated by a prominent smooth ridge.

The Japanese species, on the other hand, is less convex, rising gradually from the margins. The cardiac and branchial grooves are deep; this, together with the frequent occurrence of longer hairs in the short pile, gives the carapace a more uneven and ragged appearance. All the teeth have small, acute, white tips; antero-lateral teeth four, similar, their sides concave near the tips, posterior slopes then becoming convex in outline.

The median tooth of the front is smaller than the lateral pair and less advanced. There is a small sharp denticle on the upper margin of the orbit; this is present in every specimen examined, regardless of size.

The dactyls of the two walking legs are as long as, or longer than, their propodites, and are longer and slenderer than in the Hawaiian species; their upper and lower surfaces are bare along the middle lengthwise, the upper surface bordered on each side by a thick brush of longish stiff hairs which are for the most part flattened out in an almost horizontal plane; these two brushes are continuous at the proximal end of the article, where the hairs are obliquely ascending; below there is a median row of about 13 slender, appressed, graduated spines, which vary little in length, but are longest toward the slender, horny tip of the dactyl.

The propodus of the last leg has only two spines, those forming a chela with the dactyl, and lacks the spine at the opposite side of the dactyl which is present in the Hawaiian form.

The sulci of the female sternum converge until they reach the line between the first and second ambulatories, then are parallel and distant for a ways, then diverge strongly, each terminating at the line between the cheliped and first leg in a large, high, conical tubercle; these tubercles do not touch at base and are inclined away from each other.

Previous to 1837 only one of these species, the Hawaiian one, appears in literature. Rumphius, 1705, briefly describes and figures it (front view) from Amboina. Despite the inaccuracies of the figure, it is identifiable by its great convexity, the character of the ambulatory dactyls, and the evidence of an extra small tooth on the right margin (left in the figure) of the carapace.

The figure given by Seba, 1758, is admirable. The pile had been removed from the carapace except for a marginal rim, and shows the epigastric hump

and the sutures of the after part. The strong marginal teeth are accurately represented, as are also the extremities of the four pairs of legs, including the four spines of the last leg and the three spines of the penultimate leg.

Linnaeus, Fabricius, Latreille and Lamarck in turn (1763–1818) described this species briefly but there is no evidence that any of them had ever seen a specimen; the figure given by Latreille (1818) is a copy of Seba's. During this period the following names were used: *Cancer dormia* Linnaeus, *Cancer dromia* Fabricius and *Dromia rumphii* Weber. The first of these specific names must be adopted, and combined with the generic name *Dromidiopsis* Borradaile. In this genus the sternal grooves of the female end together, the carapace is almost without regions, and there is usually a thorn on the outer side of the last joint of the fifth leg.

In 1837 Milne Edwards described a species under the name of *Dromia rumphii*, which he considered the same as that recorded by his predecessors. He says, however, that the antero-lateral borders are armed with four large teeth, little prominent and having the same form and size; further, that the dactyls of the ambulatories are longer and more slender than in the large European and American Dromias and are armed beneath by very small spines. This then is the second of the species which I have outlined above, the one inhabiting Japanese waters and well figured by de Haan. I therefore name it **Dromia dehaani,** new species.

From Milne Edwards to the present both species have been called *Dromia rumphii* or *D. dormia*. In the synonymical lists which follow I have endeavored to place the various citations correctly. Some authors have had both species in hand and attribute an occasional extra tooth on the carapace margin to age or variation.[1] Few note the unique ambulatory dactyli of *D. dehaani;* they are figured by de Haan and described by Targioni-Tozzetti.

Dana's *Dromia hirsutissima* is not that of Lamarck, which is overlaid with very long but not very dense hair, and has the anterior with the antero-lateral margin forming three well-defined lobes.[2]

Cancer dormitator Herbst, 1790,[3] is perhaps the same as *Dromia hirsutissima*; the type is not extant.

Dromidiopsis dormia (Linnaeus).

Cancer Lanosus Rumphius, D'Amboinsche Rariteitkamer, 1705, p. 19, pl. 11, fig. 1.

Cancer lanosus, calvatus, mas, pronus, Seba, Thesaurus, vol. 3, 1758, p. 42, pl. 18, fig. 1.

Cancer dormia Linnaeus, Amoen. Acad., vol. 6, 1763, p. 413; Syst. Nat., ed. 12, vol. 1, part 2, 1767, p. 1043.—Fabricius, Syst. Entom., 1775, p. 405.

Cancer dromia Fabricius, Species Insect., vol. 1, 1781, p. 501; Mantissa Insect., vol. 1, 1787, p. 320; Entom. Syst., vol. 2, 1793, p. 451.

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[1] In weighing the descriptions it must be borne in mind that some authors reckon the posterior branchial tooth as "postero-lateral."

[2] See Desmarest, Consid. Gén. Crust., 1825, pl. 18, fig. 1.

[3] Naturg. Krabben u. Krebse, vol. 1, p. 250, pl. 18, fig. 103.

Dromia rumphii Weber, Nomen. Entom., 1795, p. 92.—Fabricius, Entom. Syst., Suppl., 1798, p. 359.—Latreille, Hist. Nat. Crust., vol. 5, an XI [1803], p. 386; Tabl. Encyc., part 24, Crust., 1818, pl. 278, fig. 1 (after Seba).—Lamarck, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 264.—Hilgendorf, MB. Akad. Berlin, 1878, p. 812 (part: Inhambane, Mozambique).—Ortmann, Zool. Jahrb., Syst., vol. 6, 1892, p. 548 (part: Südsee).—Alcock, Jour. Asiat. Soc. Bengal, vol. 68, 1899, p. 137 (part: specimens with 4 antero-lateral spines); Cat. Indian Dec. Crust., part 1, 1901, p. 44, pl. 2, fig. 4 (part).—Lenz, Zool. Jahrb., vol. 14, Syst., 1901, p. 450; Honolulu.—De Man, Abh. Senckenb. Nat. Ges., vol. 25, 1902, p. 687; Ternate; Rumphius Gedenboek, 1902, p. 104.—Nobili, Ann. Sci. Nat., ser. 9, Zool., vol. 14, 1906, p. 144; Obock and Djibouti.—Edmonston, Occas. Papers B. P. Bishop Mus., vol. 8, Honolulu, 1922, p. 33, pl. 1; Hawaiian Islands. Not *Dromia rumphii* Milne Edwards, 1837.

Dromia hirsutissima Dana. U. S. Expl. Exped., vol. 13, Crust., 1852, p. 403; Sandwich Islands and Cape of Good Hope. Not *D. hirsutissima* Lamarck, Desmarest, or *D. hirtissima* Milne Edwards.

Dromia dormia [by error, *dornica*] Balss, Zool. Ergeb. Forsch. westl. u. Zentral. Südafrika, vol. 5, pt. 2, 1913, p. 109; False Bay.

Dromidia hirsutissima Edmonston, Occas. Papers B. P. Bishop Mus., vol. 8, Honolulu, 1922, p. 34.

Range.—Hawaiian Islands (Dana, Lenz, Edmonston). South Sea (Ortmann). Ternate (de Man). Amboina (Rumphius). Red Sea (Nobili). Mozambique (Hilgendorf). Cape of Good Hope (Dana, Stebbing, Balss).

Material examined.—

Hawaiian Islands; U. S. Exploring Expedition (Mr. Richards); 1 female (47873).[1] This is the smallest specimen in the Nat. Mus. collection, 90.8 mm. by 115.7 mm.

Maui, H. I.; U. S. Exploring Expedition (C. Pickering); 1 specimen, comprising carapace, eyes and antennae only (2442), (*Dromia hirsutissima* Dana).

Honolulu; U. S. Fish Comm.; 1 male (48271).

Hawaiian Islands; U. S. Fish Comm.; 1 male, 145 mm. by 182 mm. (50488).

Cape of Good Hope; U. S. Exploring Expedition; 1 male (*Dromia hirsutissima* Dana) (28990).

Dromia dehaani, sp. nov.

Dromia rumphii Milne Edwards, Hist. Nat. Crust., vol. 2, 1837, p. 174 (not synonymy); les Indes orientales. Not *Dromia rumphii* Weber, 1795.—De Haan, Fauna Japon., Crust., 1839, p. 107, pl. 32.—Stimpson, Proc. Acad. Nat. Sci. Philadelphia, vol. 10, 1858, p. 240 [78]; Smithson. Misc. Coll., vol. 49, 1907, p. 177, pl. 21, fig. 7 (abdomen of male); Hongkong.—Hilgendorf, MB. Akad. Berlin, 1878, p. 812 (part:

[1] The numbers in parentheses are catalogue numbers of the U. S. National Museum.

India).—Targioni Tozzetti, Zool. *Magenta*, Crust., 1877, p. 207.—Ortmann, Zool. Jahrb., Syst., vol. 6, 1892, p. 548 (part: Japan).—Henderson, Trans. Linn. Soc. London, ser. 2, Zool., vol. 5, 1893, p. 198; Ceylon.—Alcock, Jour. Asiat. Soc. Bengal, vol. 68, 1899, p. 137 (part: specimens with 3 antero-lateral spines).—Doflein, Abh. k. Bayer. Akad. Wiss., math. phys. Cl., vol. 21, 1902, p. 653; Sagami Bay.

Dromia indica Targioni Tozzetti, Atti Soc. Ital., Milan, vol. 15, 1872, p. 10; Giava. Not *D. indica* Gray, 1831–1844.

Dromia dormia Rathbun, Proc. U. S. Nat. Mus., vol. 26, 1902, p. 32; Japan.—Borradaile, Ann. Mag. Nat. Hist., ser. 7, vol. 11, 1903, p. 298.—Stebbing, S. African Crust., part 3, 1905, p. 61.—Ihle, *Siboga* Exped., Monog. 39 *b*, 1913, p. 22 (Japan and Java Sea).

Dromia rumphi Borradaile, Fauna Maldive and Laccadive Arch., vol. 2, part 1, 1903, p. 576, pl. 33, fig. 1 *a*-1 *d*; Haddumati Atoll.

Range.—Japan (de Haan, Ortmann, Doflein, Rathbun, Ihle). Hongkong (Stimpson). Java (Targioni Tozzetti, Ihle). Indian Ocean (Hilgendorf, Henderson, Alcock, Borradaile). Gulf of Aden.

Material examined.—

Hakodate, Japan; Madoka Sasaki; 1 young male (54493).

Kururi, Tokaido coast, Japan; April, 1894; F. Sakamoto; 1 male, 1 female, holotype (18853); purchased from Garrett Droppers.

Wakanoura, Kii, Japan; 1900; Jordan and Snyder; 1 male (26284); from Stanford University.

Hongkong, China; North Pacific Exploring Expedition (William Stimpson); 2 males, 2 young females (2113) (*Dromia rumphii* Stimpson). One male measures 86 mm. by 102.4 mm., and is the largest specimen in the National Museum collection.

Gulf of Aden; L. M. McCormick; 1 male (42218); from Glen Island Museum.